

WEATHER, FORECASTS AND WARNINGS.

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NORTHERN HEMISPHERE PRESSURE.

At the beginning of the month pressure was low over northern Asia, especially over central Siberia, but by the 3d there was a general recovery, most marked where the pressure had been lowest a few days before, and from the 4th to 8th, inclusive, the barometer readings at Tomsk and Irkutsk were well above 31 inches, with a crest of 31.42 inches at Irkutsk on the 7th. After the 8th there were alternate fluctuations between moderately low and moderately high pressure, except over northeastern Siberia, where low pressure was the rule, with a low reading of 29.29 inches at Yakutsk on the 21st. Over the north Pacific Ocean and Alaska there were a series of depressions that were remarkable for their persistence and for the low barometer readings recorded. On only three days was there a reaction to normal conditions, and at Dutch Harbor there was a low reading of 27.55 inches at 2 p. m. of the 16th. The following special report on this abnormally low barometer reading was kindly furnished by Mr. S. Applegate, formerly an observer of the Weather Bureau:

UNALASKA, ALASKA, November 17, 1912.

I am sending you a report of the weather conditions at Unalaska, yesterday, 16th, when our barometer registered the extreme low pressure of 27.55 inches at 2 p. m.

On the forenoon of the 15th the weather indications in the early morning were nothing unusual, except that the barometer was somewhat below normal, registering 29.25 during the forenoon and falling slowly, and the sky was partly covered by stratus clouds with little motion.

By 9 a. m. more wind was observed on the mountain tops by the snow being picked up and whirled about. The natives, on noticing this, said it was going to be bad.

They probably noticed it more in this instance because the U. S. revenue cutter *Bear* had just left for the States, and they thought it would have been better for her to remain in port and wait.

Before noon there was slightly more wind with good indications that it would get worse. During the forenoon the wind was from the southeast, blowing between 12 and 18 miles per hour with cloudy weather and some rain at times, and with the barometer falling slowly.

During the night the weather got much worse, the wind increased to probably 30 miles, with heavy rain. In the early morning and forenoon of the 16th the wind had increased slightly, blowing between 30 and 36 miles, and squally, with steady rain and falling barometer.

At 8 a. m. the barometer registered 28.00 and fell quite rapidly till 2 p. m. In the meantime the wind became less squally before noon, with the weather showing a tendency to clear up, which it did quite rapidly soon after midday.

At 2 p. m. the barometer registered 27.55 and remained stationary the rest of the day, with clouds broken up and the wind decreasing to light.

It remained nearly calm all night of the 16th, with the sky partly covered with clouds.

At 8 a. m., the 17th, the barometer showed 28.00, weather fair and almost calm all forenoon; the sky was partly covered with broken stratus clouds, which merged more or less into the cumulo-form.

As the weather in the harbor was nothing more than a light storm, it may have been more severe a short distance away from here.

The *Bear*, no doubt, had to lay-to during this blow and probably was somewhere between 50 and 100 miles east of here.

Perhaps much could be learned from her weather record, which is taken hourly.

We have four barometers here, one mercurial and three aneroids, and none of them shows a difference greater than 0.08 of an inch.

The reading, 27.55, was taken from my aneroid and corrected to agree with the mercurial barometer.

As is generally the case, opposite conditions prevailed over the south Pacific Ocean, as indicated by the pressure at Honolulu, where the barometer did not fall below the normal until the recovery began over Alaska during the last few days of the month. There was little or no movement of the extensive low-pressure condition, although some offshoots apparently moved eastward in moderate form over Canada. Over the United States pressure conditions were not of such character as to call for special comment. There was a regular progression of moderately high and low areas, with the result that there were no decided extremes of weather and temperature conditions until the last few days of the month, when there was a decided change over the east and south, due to the sudden appearance and rapid development and northeastward movement of an Atlantic coast disturbance. Over the Atlantic Ocean high pressure ruled, except over the east central portion, where a moderate depression persisted during the first week of the month.

Over northern Europe weather conditions were quite pronounced, with low pressure predominating. There was a strong high area over Iceland during the first three days of the month, followed by a greater fall to below normal conditions from the 5th to the 10th, inclusive, and an equally marked rise to above normal conditions on the 12th. These general fluctuations moved eastward in modified form until northwestern Russia was reached and, after the passage of the Iceland high area on the 12th, low pressure prevailed as a rule. Over central and southern Europe pressure was relatively high, except during a few days toward the middle and at the end of the month. The lowest barometer readings were recorded on the 11th and 12th, the depression forming the southern extension of the severe storm that passed over Iceland on the two previous days.

Two instances of departures from general pressure distribution over the United States are worthy of some special mention. The first was a tropical disturbance, of which the first reported indications were violent thunderstorms on the 11th over the island of Jamaica. During the 11th and 12th radiograms from vessels in the Caribbean Sea east of Nicaragua showed falling pressure, and on the 13th, through the aid of vessel radiograms, a definite center of disturbance was noted from 100 to 150 miles east of the Nicaragua coast, with a barometer reading of 29.30 inches. The storm apparently recurved after reaching that point and by the 16th had reached the island of Jamaica, where the barometer had been falling slowly but steadily since the 11th. The storm increased steadily in intensity after the turn to the northeastward, and it was apparently felt in its greatest severity over the extreme western portion of the island of Jamaica. The hurricane began over the island on the 15th and continued for several days. The pressure fell steadily until 6 a. m. of the 18th, at which hour the barometer at Negril Point read 28.487 inches, while at Kingston at the same time the reading was about 1 inch higher. Vessels in the path of the storm reported wind velocities of more than 100 miles an hour, and at Negril Point the anemometer

recorded a velocity of 120 miles an hour from the northeast at 2.03 a. m. of the 18th, when two of the cups were wrenched off, with the wind still increasing. The barometer at that time read 28.90 inches, and for 12 hours previously the wind had been blowing between 60 and 80 miles an hour from the southeast. By 10 a. m. the wind had shifted to northwest, but was still blowing with hurricane force with a barometer reading of 28.78 inches. From 7 a. m. of the 17th to 2 a. m. of the 18th the average wind velocity was 66 miles an hour, while the rainfall for the 24 hours ending at 7 a. m. of the 18th was 12.79 inches. There had also been 3.34 inches during the previous 24 hours.

The first advices regarding this storm were issued on the 13th and were repeated later as often as information became available. These advices were also distributed by radiotelegraph to vessels in the vicinity, and mail reports indicated that they were of much value.

Great damage was wrought in Jamaica. Several towns were practically wiped out by winds and tidal waves, and the loss of approximately 100 lives was reported. At the town of Savannah La Mar, on the south coast of the island, the tidal wave was the highest in a century. After leaving Jamaica the intensity of the storm decreased and on the morning of the 20th, a vessel radiogram from the Windward Passage showed a barometer reading of 29.84 inches with a moderately strong northeast wind. The storm apparently continued northward a short distance to the westward of Turks Island, and was next noted on the morning of the 23d about 300 miles east of Charleston, S. C. It then continued due northward with slowly increasing energy and by the morning of the 25th had reached northern New York. After this time it moved northeastward and was last noted over Nova Scotia on the morning of the 26th. More details of the action of this storm after it reached the coast of the United States will be found in the discussion of the general weather conditions. A rather full account of this storm, furnished by the Hon. Maxwell Hall, Government meteorologist for Jamaica, appears elsewhere in this Review.

The second unusual pressure variation was that of the Atlantic coast storm of November 28 and 29, and, as this directly affected the coast States, it will also be discussed with the general weather conditions.

WEATHER IN THE UNITED STATES.

At the beginning of the month the southwestern storm that was in progress at the end of October had reached the lower Lake region, with general rains falling east of the Mississippi River, except in New England, and with strong winds and high temperatures in the lower Lake region. Storm warnings had previously been ordered on the Great Lakes, and on the 1st they were ordered displayed on the Atlantic coast from Hatteras, N. C., to Eastport, Me. During the night of the 1st the three-masted schooner, *John Maxwell*, was wrecked on the shoals on New Inlet, N. C., and only the captain was saved, the entire crew of seven men being drowned. The sloop yacht, *Crown*, was blown offshore near Hog Island, Va., but the crew was taken off by the steamer *Bayno*. There was also some damage to shipping on eastern Lake Erie. The storm continued east-northeastward over the St. Lawrence Valley and passed off the Nova Scotia coast during the night of the 2d. The high area following this storm was accompanied by a considerable fall in temperature with heavy to killing frosts on the 2d from

interior Texas northeastward, the frosts continuing on the 3d and extending into the east Gulf and Atlantic States generally, except eastern Florida. Warnings of these frosts and freezing temperatures were issued in all cases 24 hours in advance, and they were again issued on the 3d for the killing frosts that occurred on the 4th over the middle and south Atlantic States, except Florida.

In the meantime another disturbance, noted on the 1st over the Canadian far Northwest, was moving eastward over the northern portion of the country. The general depression at first moved southward as well as eastward attended by rains and snows west of the Rocky Mountains, but with rapidly rising temperature only to the eastward. The southern portion of this depression disappeared during the night of the 3d, while the principal depression moved to the northeastward of Lake Superior after causing some light local rains in the Lake region. Pressure continued high over the eastern portion of the country and the Atlantic Ocean, but there was no recovery in the West, as another low that appeared on the extreme north Pacific coast on the morning of the 1st moved slowly down over the Plateau region, reaching western Kansas on the morning of the 6th. It then moved east-northeastward. Thereafter its history was peculiar. On the morning of the 6th a moderate disturbance appeared over Pensacola, Fla., while the western storm was over Illinois. Both continued northeastward with increasing intensity, and by the evening of the 7th they had merged into a single storm of marked intensity central over eastern New York. In the meantime pressure had risen rapidly from the Gulf of St. Lawrence eastward, and the progress of the storm was arrested, although low pressure continued for several days after over the Canadian Maritime Provinces, the last evidences appearing at St. Johns, Newfoundland, on the 14th. This storm was attended by general rains, except along the east slope of the Rocky Mountains, and by high temperatures. In the Atlantic States heavy rains fell on the 7th. Storm warnings were ordered on the 6th on the northwest Florida coast and on the 7th from Wilmington, N. C., to Eastport, Me. In all cases the warnings were followed by high winds, ranging from 35 to 60 miles an hour.

Again the pressure recovery was not decided, owing to the approach of another disturbance, and frost warnings on the 6th for Tennessee, Mississippi, and the Southwest failed of verification. The barometer remained low on the north Pacific coast with continued rains, and storm warnings were necessary on the 6th, 7th, 9th, and 11th, and on the first-named date a low began to move eastward over the Canadian northwest. It was a dry low until the upper Lakes were reached, and on the 9th it apparently merged with the remnants of the preceding storm. Some moderately high winds occurred on the 8th on the Great Lakes, but none was of much consequence. For a day or two high pressure prevailed over the central and eastern portion of the country with moderate temperatures, but pressure had again been falling over the West, and on the 9th another low of considerable intensity started eastward over the Canadian northwest, and still another equally marked neared the north Pacific coast. The Canadian disturbance moved almost due eastward, the prevailing high pressure to the southeastward preventing any movement in that direction, and during the 10th it disappeared northeast of Lake Superior without having caused any material change in weather conditions along its course. However, the eastern and southern high area was slowly giving way, and by the evening of the 10th the north Pacific coast low of the 9th had reached South Dakota,

after sending an offshoot to Utah. Rains were general west of the Rocky Mountains, but as yet there had been no results to the eastward, except a marked rise in temperature. By the evening of the 11th the trough of low pressure extended from western Kansas to Ontario without precipitation, except some rain and snow in Montana and the Rocky Mountain region, but by the morning of the 12th the northern center had reached the lower St. Lawrence Valley with some snow and rain in that immediate vicinity, while the southern center had moved to western Missouri attended by general rains in the Missouri and upper Mississippi Valleys and western upper Lake region.

The storm continued northeastward during the 12th, and storm warnings were ordered for the northern and western upper Lake region. By the morning of the 13th the storm was central over southern Michigan, the rains had extended through the Ohio Valley, the Lake region generally, New York, and New England, and storm warnings were ordered for the balance of the Great Lakes and on the Atlantic coast from Cape May, N. J., to Eastport, Me. Snow fell in the upper Lake region, and severe gales occurred on the Great Lakes and along the Atlantic coast, causing considerable damage to shipping. In the lower St. Lawrence Valley the high winds on the 13th and 14th were accompanied by a fall of snow so heavy that shipping was paralyzed and outside business brought to a standstill. By the morning of the 14th the storm had lost much of its definite formation and presented two distinct centers, one over Lake Huron and the other off the New Jersey coast, with general rains in New England and the middle Atlantic States and rains and snows in the Lake region. The depression then moved slowly eastward and northeastward and it was not until the 17th that the last indications were observed off the coast of Nova Scotia. A fairly well-defined high area, with a temperature fall to nearly normal conditions, followed this storm, and on the 15th warnings were issued for the frosts that occurred in the Southern States on the following morning. Pressure still remained low from the Pacific coast northward, and, beginning on the 13th, another depression moved across the Canadian northwest. It was nearly dry and almost entirely lost its energy by the time it reached western Lake Superior on account of the marked high pressure both in front and in the rear. However, there was a redevelopment during the 16th, with a rapid eastward movement, and by the time the low had passed off the Nova Scotia coast on the 20th it had attained the proportions of a severe storm. Snows and rains fell from the Lake region eastward, but there were no high winds, and the high area following over the Lakes was short lived and of moderate character only. The interior high area was of much greater magnitude and proved to be the most extensive and pronounced one of the month. It first appeared in very moderate form over British Columbia on the evening of the 14th and afterwards spread eastward and southward over the entire western half of the country with a crest of 30.80 inches over western South Dakota on the morning of the 16th. It then apparently joined forces with the southern portion of the eastern high area that had rapidly recovered after the passing of the last low area, and high pressure was general except over the northeastern and northwestern extremities of the country. There was a sharp fall in temperatures and heavy frosts or freezing temperatures were general in the Southern States on the 17th.

The pressure remained high in the Southeast until the 21st, with resulting fair weather over the country

generally, except in the Pacific Northwest, where rains continued. Low temperature also continued in the South. On the evening of the 16th a depression appeared off the extreme north Pacific coast. It caused rains and high winds on the 18th on the Washington coast (storm warnings ordered on the evening of the 17th), and then moved eastward over Canada without precipitation, reaching the Newfoundland coast on the morning of the 20th, the barometer at St. Johns reading 29.40 inches. Another disturbance of similar character followed quickly, leaving the north Pacific coast on the evening of the 18th, and reaching the Gulf of St. Lawrence on the evening of the 21st. A high area of good proportions followed this low, and it spread eastward and southeastward over the middle and southern Plateau and Rocky Mountain regions, reaching the central valleys with lessened strength on the 21st, but continuing in nearly full vigor over the middle Plateau until the 23d, when it moved eastward. In the meantime a third low had moved eastward over Canada, leaving the Pacific coast on the 20th and reaching the Gulf of St. Lawrence on the morning of the 23d. This low was also practically dry, except on the Washington coast, where there were rains with some high winds for which warnings were necessary. The disturbance of the 18th also sent an offshoot southeastward over the Plateau region, causing light rains and snows. It continued southeastward and passed into the Gulf of Mexico on the 22d, after causing general and substantial rains over eastern Texas. No cold weather of consequence followed, and frost forecasts for the Southwestern States failed of verification in eastern Texas.

During the 21st another disturbance moved in from the extreme north Pacific coast. This one inclined more to the southward than had its immediate predecessors. It was followed by a decided fall in temperature in the Plains States and by the Plateau high before mentioned, and when it reached Lake Michigan on the morning of the 23d it had developed into a pronounced low with snow and increasing winds, for which storm warnings were ordered. On the following morning it was found that the storm center had moved only a few miles to the eastward, with high winds continuing and rain and snow still falling over the upper Lake region. Several lives were lost, and some shipping casualties were reported on the upper Lakes. The situation had now become complicated through the approach of the West Indian disturbance that had visited the island of Jamaica a week before. This storm was now (November 24) near the southern New Jersey coast, and rains and snows had extended into the lower Lake region and the middle Atlantic States. Storm warnings were ordered on the coast from Delaware Breakwater northward, and during the night and the day following high winds occurred generally, with heavy snows and rains in New York and New England. The storm center by this time (November 25) had moved into northwestern New England, while the one over Michigan had disappeared. The coast storm then moved northeastward and disappeared into the Atlantic during the night of the 25th. The high area following kept well to the southward, necessitating general warnings on the 24th for the heavy frosts that occurred on the following morning as far south as extreme northern Florida. Pressure did not recover rapidly to the northward as another low had reached eastern Lake Superior. This low appeared over Alberta on the 23d, but did not develop to any extent until it reached the Great Lakes. It was not

severe at any time, but was attended by general rain and snow, mostly snow, and passed out of the Gulf of St. Lawrence on the night of the 27th. Over northern New York the snowfall was very heavy, and at Canton there was a fall of 24 inches during the 12 hours ending at 8 a. m., of the 27th. An extensive high pressure area followed this disturbance and temperatures fell considerably. Frosts occurred, as forecast, for several days in California.

On the night of the 27th the barometer was still high over the interior of the country except the Northwest, with the crest of high pressure over Texas, and cold wave and heavy frost and freezing temperature warnings were ordered for the Southwest. Conditions as forecast occurred on the following morning, and extended on the 29th and 30th to the south Atlantic coast, except over Florida. The low temperature in the east Gulf and south Atlantic States was preceded by a very remarkable change in weather conditions. On the morning of the 27th the pressure was high and rising, ranging from 30.68 inches over the Texas Panhandle to 30.26 inches on the South Carolina coast. It fell somewhat during the day over the south Atlantic States, but rose in the Gulf States, and snow fell generally and in substantial quantity throughout the Southern States east of the Mississippi River. There had also been some snow on the 26th from Arkansas westward to northwestern Texas, and light rains to the southward of this area. By the evening of the 27th there were some indications of a disturbance off and near the northern coast of Florida, and cautionary advices were at once telegraphed to coast stations. By the morning of the 28th pressure had fallen 0.42 inch at Hatteras, N. C., with a northwest wind of 48 miles an hour and storm warnings were at once ordered along the entire coast from Hatteras northward. The storm did not touch the coast but continued to make rapid progress to the north-northeastward, and on the morning of the 29th the center was to the northward of St. Johns, Newfoundland, the barometer at that place reading 29.24 inches. Snow occurred generally in the Atlantic States, but the only high winds north of the Virginia coast occurred on the New England coast, Nantucket, Mass., reporting 60 miles an hour from the northeast during the afternoon of the 28th.

A mail report from the captain of the steamship *Lakonia* stated that while in latitude 40° N. and longitude 68° W., approximately 200 miles southeast of Nantucket, a fresh southerly gale blew during the evening of the 28th and at 12.15 a. m. of the 29th shifted to north-northeast, backing later to northwest and blowing with hurricane force and accompanied by rain and hail. At 1 a. m. of the 29th the ship's barometer read 29.02 inches, but by 4 a. m. it had risen to 29.80 inches, when the position of the vessel was latitude 39° 41' N. and longitude 69° 1' W. approximately. It is impossible to speak with precision as to the origin of this storm. It apparently developed in its incipency immediately above the cold and shallow high in the neighborhood of the northwest coast of the Gulf of Mexico, possibly near the Louisiana coast, not increasing to any extent, and not reaching the surface until it had crossed over the northern portion of the Florida Peninsula. It presents a striking illustration of the limitations that encompass the art of weather forecasting and affords another effective argument for the increase of our facilities for the observation and study of the upper atmosphere by means of the kite and balloon.

On the 27th a depression appeared over northern Alberta. It was probably an offshoot from the abnormally low area that prevailed over Alaska during the greater portion of the month and it moved eastward over Canada after sending an arm to the southward along the eastern slope of the Rocky Mountains. The secondary depression disappeared during the night of the 28th without unusual incident, while the main one continued eastward, with only light local precipitation over the northern border States, and disappeared off the Nova Scotia coast during the night of the 30th. At the end of the month high pressure prevailed over the eastern half of the country and low pressure over the western half. A disturbance attended by rains appeared on the extreme north Pacific coast on the morning of the 29th and storm warnings were ordered for the high winds that prevailed later in the day. By the end of the month the center of the disturbance was over eastern Colorado and rains and snows had fallen over Idaho, western Montana, Utah, Wyoming, and western Colorado. Another low had also appeared off the northern Washington coast.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England.....	12	42.3	+2.9	- 5.9	-0.5
Middle Atlantic.....	15	46.1	+2.2	- 6.1	-0.6
South Atlantic.....	10	53.1	-1.0	- 0.9	-0.1
Florida Peninsula ¹	9	63.7	-1.6	- 0.9	-0.1
East Gulf.....	11	53.3	-2.3	- 8.1	-0.7
West Gulf.....	11	56.4	+0.1	- 9.6	-0.9
Ohio Valley and Tennessee.....	14	45.4	+0.5	-15.8	-1.4
Lower Lakes.....	11	41.7	+2.6	-21.8	-2.0
Upper Lakes.....	13	37.2	+2.9	-21.5	-2.0
North Dakota ¹	8	31.7	+6.1	- 9.4	-0.9
Upper Mississippi Valley.....	14	42.1	+4.5	-18.4	-1.7
Missouri Valley.....	12	43.1	+5.7	- 8.5	-0.8
Northern slope.....	9	37.7	+5.7	-15.6	-1.4
Middle slope.....	6	45.4	+3.6	-16.8	-1.5
Southern slope ¹	8	50.1	-0.3	- 9.6	-0.9
Southern Plateau ¹	10	48.3	-0.6	-12.9	-1.2
Middle Plateau ¹	10	38.0	+0.8	-14.9	-1.4
Northern Plateau ¹	10	40.0	+3.0	-10.4	-0.9
North Pacific.....	7	46.2	+1.1	+ 7.6	+0.7
Middle Pacific.....	7	53.5	+0.5	- 2.9	-0.3
South Pacific.....	4	60.0	+2.9	+ 5.4	+0.5

¹ Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England.....	11	3.24	92	-0.30	- 3.60
Middle Atlantic.....	15	2.37	86	-0.40	- 0.90
South Atlantic.....	11	2.06	70	-0.90	- 3.40
Florida Peninsula ¹	9	3.18	146	+1.00	+10.90
East Gulf.....	11	2.20	63	-1.30	+13.90
West Gulf.....	10	1.04	34	-2.00	- 5.50
Ohio Valley and Tennessee.....	14	0.93	28	-2.50	- 0.80
Lower Lakes.....	10	2.56	84	-0.50	+ 0.80
Upper Lakes.....	13	1.75	71	-0.70	+ 1.10
North Dakota ¹	9	0.17	22	-0.60	+ 1.60
Upper Mississippi Valley.....	15	1.14	56	-0.90	- 2.20
Missouri Valley.....	12	0.75	60	-0.50	- 3.40
Northern slope.....	9	0.56	58	-0.40	+ 0.30
Middle slope.....	6	0.40	40	-0.60	+ 0.20
Southern slope ¹	8	0.44	27	-1.20	+ 0.50
Southern Plateau ¹	9	0.12	19	-0.50	- 0.10
Middle Plateau ¹	11	0.87	87	-0.10	+ 0.50
Northern Plateau ¹	10	1.58	89	-0.20	+ 2.80
North Pacific.....	7	7.56	104	+0.30	+ 1.20
Middle Pacific.....	7	2.64	87	-0.40	- 3.80
South Pacific.....	4	2.39	80	-0.60	- 1.40

¹ Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departure from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	75	- 3	Missouri Valley.....	62	- 9
Middle Atlantic.....	69	- 6	Northern slope.....	65	- 2
South Atlantic.....	68	-10	Middle slope.....	60	- 2
Florida Peninsula.....	78	- 2	Southern slope.....	60	- 2
East Gulf.....	69	- 7	Southern Plateau.....	47	+ 4
West Gulf.....	68	- 6	Middle Plateau.....	61	+ 3
Ohio Valley and Tennessee.....	67	- 6	Northern Plateau.....	70	- 4
Lower Lakes.....	75	- 2	North Pacific.....	88	+ 4
Upper Lakes.....	78	- 2	Middle Pacific.....	78	+ 3
North Dakota.....	78	- 1	South Pacific.....	60	- 7
Upper Mississippi Valley.....	70	- 4			

Average cloudiness and departure from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	6.1	+0.3	Missouri Valley.....	3.7	-1.1
Middle Atlantic.....	5.0	-0.3	Northern slope.....	5.4	+0.6
South Atlantic.....	3.1	-1.4	Middle slope.....	3.1	-0.8
Florida Peninsula.....	4.5	+0.2	Southern slope.....	3.1	-2.1
East Gulf.....	3.4	-1.2	Southern Plateau.....	2.2	-0.6
West Gulf.....	3.8	-0.8	Middle Plateau.....	3.6	-0.3
Ohio Valley and Tennessee.....	4.8	-0.9	Northern Plateau.....	7.3	+1.5
Lower Lakes.....	6.7	-0.6	North Pacific.....	8.3	+0.8
Upper Lakes.....	6.7	-0.4	Middle Pacific.....	5.1	+0.6
North Dakota.....	5.2	-0.2	South Pacific.....	2.8	-0.5
Upper Mississippi Valley.....	4.6	-0.7			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.....	25	56	w.	New York, N. Y.....	1	53	sw.
Do.....	28	55	n.	Do.....	7	58	s.
Buffalo, N. Y.....	1	72	sw.	Do.....	9	52	nw.
Do.....	5	54	sw.	Do.....	24	57	w.
Do.....	13	54	sw.	Do.....	25	60	nw.
Do.....	14	54	sw.	North Head, Wash.....	4	66	se.
Do.....	19	56	sw.	Do.....	7	60	se.
Do.....	26	56	sw.	Do.....	9	60	se.
Do.....	29	60	w.	Do.....	10	57	se.
Do.....	30	52	w.	Do.....	11	66	se.
Carton, N. Y.....	1	66	sw.	Do.....	12	76	se.
Cleveland, Ohio.....	9	50	w.	Do.....	18	60	se.
Duluth, Minn.....	20	50	w.	Do.....	29	56	se.
Eastport, Me.....	25	60	ne.	Pierre, S. Dak.....	22	51	nw.
El Paso, Tex.....	16	51	ne.	Point Reyes Light, Cal.....	9	54	s.
Grand Haven, Mich.....	23	52	w.	Do.....	10	50	nw.
Green Bay, Wis.....	34	54	n.	Do.....	19	60	nw.
Hatteras, N. C.....	28	66	nw.	Portland, Me.....	25	50	e.
Helena, Mont.....	22	70	sw.	Sand Key, Fla.....	28	54	nw.
Mount Tamalpais, Cal.....	5	54	sw.	Tatoosh Island, Wash.....	6	60	sw.
Do.....	10	51	nw.	Do.....	7	54	sw.
Do.....	19	66	nw.	Do.....	9	52	ne.
Do.....	29	62	nw.	Do.....	12	54	s.
Do.....	30	64	nw.	Do.....	14	50	e.
Mount Weather, Va.....	8	53	nw.	Do.....	20	60	s.
Do.....	9	50	nw.	Do.....	21	66	s.
Do.....	25	65	nw.	Do.....	26	50	e.
Nantucket, Mass.....	25	55	s.				
Do.....	28	62	ne.				